

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A Raman gain measuring method comprising ~~steps of:~~
 - inputting a CW probe light into a Raman amplifying medium;
 - generating a modulated Raman pumping light being binary-intensity-modulated by a modulation factor;
 - inputting the modulated Raman pumping light into the Raman amplifying medium;
 - extracting two index values ~~regarding to~~ from an AC component and a DC component of the probe light ~~having~~ propagated in the Raman amplifying medium; and
 - determining ~~the~~ Raman gain of the Raman amplifying medium from the two extracted index values and the modulation factor.
2. (Currently Amended) The method of claim 1 wherein the step of inputting the Raman pumping light into the Raman amplifying medium comprises ~~a step of~~ inputting the Raman pumping light into the Raman amplifying medium so that the modulated Raman pumping light propagates in ~~the~~ an opposite direction ~~with of~~ the probe light.
3. (Currently Amended) The method of claim 1 wherein the step of extracting two index values ~~regarding to~~ from the AC component and the DC component of the probe light ~~having~~ propagated in the Raman amplifying medium comprises ~~steps of:~~

converting the probe light ~~having propagated in the Raman amplifying medium into~~ to an electrical signal using a photodetector; and

extracting the two index values from the electrical signal.

4. (Currently Amended) The method of claim 1 wherein the step of extracting two index values ~~regarding to the AC component and the DC component of the probe light having propagated in the Raman amplifying medium~~ comprises steps of:

converting the probe light ~~having propagated in the Raman amplifying medium into~~ to an electrical signal using two photodetectors; and

extracting the two index values from respective electrical signals output from the two photodetectors.

5. (Original) The method of claim 1 wherein the two index values comprise an index value to show the amplitude of the AC component and an index value to show the amplitude of the DC component.

6. (Currently Amended) The method of claim 1 wherein ~~the one~~ of the two index values comprises ~~either~~ an index value to show a level of the probe light propagated in the Raman amplifying medium at a first power level of the binary-intensity-modulated Raman pumping light, or an index value to show a level of the probe light propagated in the Raman amplifying medium at a second power level of the binary-intensity-modulated Raman pumping light.

7. (Currently Amended) A Raman gain measuring apparatus to measure Raman gain in a Raman amplifying medium comprising:

a probe light source to generate a probe light composed of a CW laser light and to apply the probe light to the Raman amplifying medium;

a pumping light source to generate a pumping light to be binary-intensity-modulated by a modulation factor at a predetermined frequency;

a pumping light coupler to apply the pumping light output from the pumping light source into the Raman amplifying medium;

an index detector to detect two index values ~~regarding to~~ of an AC component and a DC component ~~out of from the applied~~ probe light having transmitted propagated in the Raman amplifying medium; and

a computing unit to determine Raman gain of the Raman amplifying medium ~~out of from the~~ two index values detected by the index detector, and the modulation factor.

8. (Original) The apparatus of claim 7 wherein the pumping light source comprises a pumping laser diode to generate a continuous wave laser light and an intensity modulator to binary-modulate the output light from the pumping laser diode by the modulation factor at the predetermined frequency.

9. (Original) The apparatus of claim 8 wherein the intensity modulator comprises an optical switch.

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10. (Currently Amended) The apparatus of claim ~~8-7~~ wherein the index detector comprises:

a photodetector to convert the applied probe light ~~transmitted the Raman amplifying medium~~ into an electrical signal; and

an index measuring apparatus to measure two index values ~~regarding to an~~ the AC component and ~~a the~~ the DC component ~~out of~~ from the electrical signal output from the photodetector.

11. (Currently Amended) The apparatus of claim 10 wherein the index measuring apparatus comprises a detector to detect the ~~component of the~~ predetermined frequency out of the electrical signal from the photodetector.

12. (Currently Amended) The apparatus of claim 10 wherein the index measuring apparatus comprises an AC detector to detect ~~an~~ the AC component of the electrical signal from the photodetector and a DC detector to detect ~~a the~~ the DC component of the electrical signal from the photodetector.

13. (Currently Amended) The apparatus of claim ~~6-10~~ wherein the index detector comprises a level detector to detect ~~out of from~~ the output ~~from of~~ the photodetector ~~either a level of the probe light having propagated the Raman amplifying medium~~ at a first power level of the binary-intensity-modulated Raman pumping light or a level of the applied probe light ~~having propagated the Raman amplifying medium~~ at a second power level of the binary-intensity-modulated Raman pumping light; and a detector

to detect one of the AC component and DC component out of the output from the photodetector.

14. (Currently Amended) The apparatus of claim 8 wherein the index detector comprises:

an optical splitter to split the applied probe light ~~having transmitted the Raman amplifying medium~~ into two portions;

a first photodetector to convert one of the output lights from the optical splitter into an electrical signal;

a second photodetector to convert the other output light from the optical splitter into an electrical signal;

a first index measuring apparatus to measure one of the two index values ~~regarding to~~ of the AC component and DC component ~~out of~~ from the electrical signal from the first photodetector; and

a second index measuring apparatus to measure the other of the two index values ~~regarding to~~ of the AC component and DC component ~~out of~~ from the electrical signal from the second photodetector.

15. (Currently Amended) The apparatus of claim 14 wherein the first index measuring apparatus comprises a detector to detect the ~~component of the~~ predetermined frequency out of the electrical signal from the first photodetector.

16. (Original) The apparatus of claim 14 wherein the first index measuring apparatus comprises an AC detector to detect the AC component of the electrical signal from the first photodetector

and the second index measuring apparatus comprises a DC detector to detect the DC component of the electrical signal from the second photodetector.

17. (Currently Amended) The apparatus of claim 14 wherein the first index measuring apparatus comprises a level detector to detect ~~out of~~ from the output ~~from~~ of the first photodetector either a level of the applied probe light ~~having propagated the Raman amplifying medium~~ at a first power level of the binary-intensity-modulated Raman pumping light, or a level of the applied probe light ~~having propagated the Raman amplifying medium~~ at a second power level of the binary-intensity-modulated Raman pumping light; and

the second index measuring apparatus comprises a detector to detect one of the AC component and the DC component ~~out of~~ from the output ~~from~~ of the second photodetector.

18. (New) A method for measuring Raman gain of a Raman amplifying medium, the method comprising:

propagating a CW probe light into the Raman amplifying medium;

propagating a modulated Raman pumping light, modulated by a modulation factor, into the Raman amplifying medium;

extracting a first index value from an AC component of the propogated probe light;

extracting a second index value from a DC component of the propogated probe light; and

determining the Raman gain of the Raman amplifying medium according to the first and second extracted index values and the modulation factor.

19. (New) The method of claim 18 wherein the steps of extracting a first index value and a second index index value comprises

converting the probe light to a first and a second electrical signal; and

extracting the first index value from the first electrical signal and the second index value from the second electrical signal.

20. (New) The method of claim 18 wherein the the first and second index values comprise an index value to show the amplitude of the AC component and an index value to show the amplitude of the DC component.